



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Kochhar et al.
Appl. No.: 10/812,088
Conf. No.: 3008
Filed: March 30, 2004
Title: FLAVOR-ACTIVE PEPTIDES
Art Unit: 1654
Examiner: J. Harle
Docket No.: 112701-474

AFFIDAVIT UNDER 37 C.F.R. § 1.132

Sir:

I hereby state as follows:

1. My education and professional experience is attached with my curriculum vitae as Exhibit B.
2. I am one of the named inventors of the above-identified patent application and am therefore familiar with the inventions disclosed therein.
3. I have reviewed the outstanding Office Action dated June 21, 2005 pending against the above-identified patent application. In addition to considering the outstanding Office Action, I have reviewed the references cited therein, i.e., Otagiri, et al., Studies on a Model of Bitter Peptide Including Arginine, Proline, and Phenylalanine Residue. I. Bitter Taste of Di- and Tripeptides and Bitterness Increase of the Model Peptides by Extension of the Peptide Chain, Agric. Biol. Chem., 1985, Vol. 49, Iss. 4, pp. 1019-1026 ("*Otagiri*"), US Patent No. 5,753,296 to Girsh ("*Girsh*") and Yu-Chiang Oh, Flavor Chemistry of the Maillard Reaction of Dipeptides, Rutgers The State University of New Jersey – New Brunswick, 1992, pp. 1-154 ("*Oh*"), as well as the pending claims. I believe that the 35 U.S.C. §112, first paragraph rejections of Claims 1, 5, 8-9, 17 and 20, the 35 U.S.C. §102 rejections of Claims 1, 5 and 17 and the 35 U.S.C. §103 rejections of Claims 1, 5, 8-9, 17 and 20 are incorrect and based on a misunderstanding of the references and the pending claims.

4. The Maillard reaction is a well-known reaction. Furthermore, the standard operating conditions required to conduct a Maillard reaction are also well known to persons skilled in the art. With the specification's model reaction and knowledge of the Maillard reaction as well as its standard operating conditions, one skilled in the art could produce, without undue experimentation, the appropriate process reactions with the noted flavor profiles. Moreover, the inventive aspect of the claimed invention is not any novel processing conditions using the Maillard reaction, but rather the isolation of the noted various peptides in cocoa beans, which in turn give rise to desired flavor profiles.

5. Performing a proper sensory evaluation of aroma (smell), a key sensory identifier in determining flavor profiles, requires evaluating a limited number of samples at one time in order to prevent olfactory fatigue. In evaluating flavor, it is standard practice to sample for aroma. Flavor, or "taste", takes into account many sensory stimuli that are just as encompassing as the tongue. Aroma is that key "other" stimuli that is often just as important as gustation (mouth assessment). Especially in the case of concentrated flavors where actual tasting could immediately fatigue the senses, it is standard practice to allow aroma to serve as a key and, at times, primary indicator of the flavor profile. Such is the case with this claimed invention.

6. As one skilled in the art, I submit that the phrase "conditions sufficient to form the flavor active compound" is not vague and indefinite. Using both the conditions disclosed in the specification and the well-known knowledge of the Maillard reaction as well as its standard operating conditions, one skilled in the art could produce, without undue experimentation, the appropriate process reactions with the noted flavor profiles.

7. Independent Claims 1 and 17 recite, in part, a flavor active compound obtained by reacting Arg-Phe with fructose in a Maillard reaction under conditions sufficient to form the flavor active compound. Independent Claim 8 is directed, in part, to the process to obtain the flavor active compound.

8. In regards to the anticipation rejections, the *Otagiri* reference fails to disclose reacting the Arg-Phe dipeptide with a reducing sugar under Maillard reaction conditions. *Otagiri* is only concerned with the bitter taste of the synthetic peptides that were synthesized by conventional methods. There is no disclosure in *Otagiri* that the Arg-Phe has undergone a Maillard reaction in the presence of a reducing sugar nor does *Otagiri* make any mention of a bread, caramel flavor. Furthermore, the use of the Maillard reaction is essential in producing the bread, caramel notes in the resultant Arg-Phe compound. Consequently, the Arg-Phe based reaction flavor of the claimed invention is a different compound than the Arg-Phe disclosed in *Otagiri* that has not undergone such a reaction. As one skilled in the art, I would not find *Otagiri* to meet each element of Claims 1 and 17.

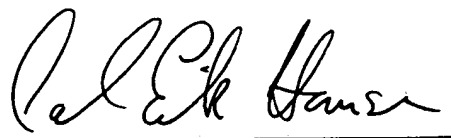
9. In regards to the first obviousness rejection, the *Girsh* reference only teaches a reaction between lactose and cocoa powder protein with a supercritical fluid. By using the vague term "protein", *Girsh* encompasses the full range of 20 amino acids. As a result, it is possible to make 400 (202) different dipeptides, 64 million (206) hexapeptides and 1052 (2040) different proteins that contain only 40 amino acids. With these millions of possible peptides in hand, *Girsh* provides no guidance and teaching that would lead a person of ordinary skill in the art to select the dipeptides of the claimed invention and react them with a reducing sugar under Maillard conditions. Furthermore, as discussed above, *Otagiri* fails to disclose reacting any dipeptide with a reducing sugar under Maillard reaction conditions. Moreover, of the dipeptides disclosed in *Otagiri*, only one of the 49 is of any use in the claimed invention.

10. In regards to the second obviousness rejection, the *Oh* reference is no more than a generic teaching of reacting dipeptides and, like *Girsh* encompasses the full range of amino acids and their resulting peptides discussed above. With these millions of possible peptides in hand, *Oh* provides no guidance and teaching that would lead a person of ordinary skill in the art to select the dipeptides of the claimed invention and react them with a reducing sugar under Maillard conditions. Furthermore, of the example peptides discussed in *Oh* in relation to the Maillard reaction, none match the Arg-Phe dipeptide or any other dipeptides cited in the rejected

claims. As one skilled in the art, I would not find any motivation to combine *Otagiri* in view of *Girsh* or *Oh* to arrive at independent Claims 1, 8 and 17.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001, Title 18, United States Code, and that willful false statements may jeopardize the validity of this patent and any patent issuing therefrom.

Date: 2005-09-12

A handwritten signature in cursive script, appearing to read "Carl Erik Hansen", written over a horizontal line.

Print Name: CARL ERIK HANSEN